



June 16, 2005

Ref: 02343-05001-32003

Dr. Richard Mani
8 Pelican Point Road
Belvedere, CA 94920

Re: Quarterly Groundwater Monitoring Report – First Quarter 2005 and Semi-Annual Biosparge System Update, Mani Site, 200 Talmadge Drive, Santa Rosa, California, NCRWQCB Case No. 1TSR279

Dear Dr. Mani:

This report presents Winzler & Kelly Consulting Engineers' (Winzler & Kelly's) results of the biosparge system operation and the groundwater monitoring and sampling performed on March 16 and 17, 2005, for the site located at 200 Talmadge Drive, Santa Rosa, California (Figures 1 and 2).

BIOSPARGE SYSTEM OPERATION

A summary of the biosparge system operation and maintenance activities is provided below.

- On November 24, 2004, the air flow rate was increased from 2.5 to 3.3 SCFM in response to continual low dissolved oxygen (DO) concentrations.
- Inspections of each sparge point revealed that the sparge point wellhead connections were leaking air. Repairs were made on February 24, 2005, and DO concentrations were measured again after a period of operation.
- On March 1, 2005, the air flow rate was increased to 6.0 SCFM due to continual low DO concentrations.
- During the March 17, 2005 sampling event, DO levels were measured and results showed an increase in DO concentrations.

The increase to 6.0 SCFM was successful in expanding the radius of influence. Analytical results from the March 17, 2005 sampling event show concentrations of total petroleum hydrocarbons as gasoline (TPH-G) significantly decreasing in monitoring wells MW-1 and MW-4, which are within the sparge points radius of influence. However, the increased demand of air flow rate (6.0 SCFM) from the existing air compressor is not sustainable because of wear on the compressor. Excessive blow-by suggests the internal rings are worn by the normal operation of the compressor. The compressor has operated 24 hours a day for almost a full year. This wear is normal and is expected. The original compressor is not in good enough condition to operate at the upper end of its performance curve.



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The current compressor performance has been diminishing, and therefore alternative compressors were evaluated to determine the most cost-effective option for the site. Compressors from other manufacturers were reviewed, but did not fit the current system setup. For these compressors to work, retrofitting is required, therefore increasing the cost of the upgrade. Evaluating compressors from AirTech only, the next size up from the 3 CIL-1 compressor was a 5 horsepower, 4-cylinder compressor that could supply 11.5 SCFM. The 4-cylinder compressor itself does not fit the current system setup therefore a new biosparge system would need to be purchased with the compressor. In addition, the current manifold and shed enclosure would need to be upgraded as well. In conclusion, the 3 CIL-1 is the best option for the site upgrade and will be installed in June 2005.

With verbal approval from the State UST Cleanup Fund (to obtain reimbursement), Winzler & Kelly has ordered a larger 2.5 horsepower, 3-cylinder compressor (model # 3 CIL-1) provided by AirTech to replace the existing compressor. The 3 CIL-1 compressor is similar to the existing compressor with the exception of an additional cylinder that will provide additional air volume with less effort on the compressor, thus lasting longer. The 3 CIL-1 compressor is the largest compressor that will easily fit the current system manifold and will not require additional power or electrical retrofitting, keeping the cost of the system compressor replacement to a minimum, and increasing the radius of influence to speed the completion of the project.

1ST QUARTER 2005 MONITORING

The Site-Specific Sampling Procedures, provided in Appendix A, describe in detail all of the monitoring and sampling activities that were performed at the site on March 16 and 17, 2005. A brief summary of these activities is also provided below.

FIELD ACTIVITIES

- Personnel Present:*** Winzler & Kelly's Environmental Engineer, Pon Xayasaeng, performed all the groundwater monitoring and sampling activities.
- Dissolved Oxygen:*** On March 16, 2005, a calibrated DO meter was used to measure the concentrations of DO in monitoring wells MW-1, MW-2, MW-4, MW-5, and MW-6. The DO readings were obtained while the biosparge system was operating.
- Depth-to-Water:*** On March 16, 2005, depth-to-groundwater (DTW) measurements were collected while the biosparge system was on. On March 17, 2005, DTW was measured again following the biosparge system shutdown. DTW was measured for each monitoring well at the site using a water level meter after allowing the wells to equilibrate to atmospheric pressure for a minimum of 30 minutes.

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- Biosparge Shutdown:*** On March 16, 2005, following DO measurements, the biosparge system was shutdown to allow groundwater levels within the monitoring wells to equilibrate.
- Purging:*** An electric 12-volt submersible pump was used to purge each monitoring well sampled of a minimum of three well volumes and until indicator parameters stabilized.
- Groundwater Sampling:*** New disposable bailers were used to collect and transfer groundwater samples from monitoring wells MW-1, MW-2, MW-4, MW-5, and MW-6 into the appropriate, laboratory-supplied, certified clean sample containers.
- Chemical Analysis:*** Analytical Sciences Laboratory (Analytical Sciences) of Petaluma, California (a California-certified laboratory) analyzed groundwater samples for TPH-G and total petroleum hydrocarbons as diesel (TPH-D) by EPA Method 8015M, for benzene, toluene, ethyl benzene, total xylenes (BTEX) and oxygenated fuel additives by EPA Method 8260B, and for Nitrite, Nitrate, Ammonia as Nitrogen, and Phosphate by EPA Method 300(IC).

GROUNDWATER MONITORING AND SAMPLING RESULTS

The groundwater elevation data and groundwater flow direction are presented in Tables 1 and 2. There is little difference between the groundwater elevation when the biosparge system was on and when the biosparge system was off. As shown on Figure 3, the groundwater at the site flows toward the southwest at an approximate gradient of 0.008 ft/ft.

Table 3 summarizes the results of the DO measured on March 16, 2005, from each well while the biosparge system was operating. Concentrations of DO in monitoring wells MW-1 (9.09 mg/L), MW-4 (4.55 mg/L), and MW-6 (4.70 mg/L) indicate a positive effect from operation of the biosparge system on March 16, 2005. DO concentrations in monitoring wells MW-2 (0.64 mg/L) and MW-5 (0.60 mg/L) are relatively similar to previous concentrations. Table 3 also provides a summary of the indicator parameters that were monitored in the groundwater extracted from the wells during groundwater purging activities of pH, conductivity, temperature, and oxidation-reduction potential (ORP).

On September 22, 2004, as part of remedial operations, Winzler & Kelly performed the first nutrient injection consisting of nitrate and potassium. Table 4 presents analytical results of nutrient compounds in groundwater samples collected on March 17, 2005. Nitrate was only found in monitoring wells MW-2 and MW-6 at concentrations of 2.0 and 1.8 mg/L, respectively. These concentrations are similar to those found before the injection, indicating that the September 2005 injection did not affect the concentration of nitrate in the groundwater. These

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nitrate concentrations are well below the California Maximum Contaminant Level (MCL) of 10 mg/L.

Table 5 summarizes the analytical results of the groundwater samples that were collected from the monitoring wells at the site. Figure 4 depicts the concentrations of TPH-G, benzene, and methyl tert-butyl ether (MTBE) in the groundwater samples. The laboratory analysis of the groundwater samples collected from monitoring wells MW-1, MW-4, and MW-5 quantified petroleum related constituents above the laboratory's reportable detection limits (RDLs). Monitoring well MW-1 contained the highest concentrations of TPH-G at 1,200 µg/L. MW-4 and MW-5 had TPH-G concentrations at 130 and 200 µg/L, respectively. The analytical results of the groundwater samples collected from monitoring wells MW-2 and MW-6 continue to be below the laboratory's RDLs. Historically at this site when the groundwater elevation increases, the dissolved hydrocarbons also increases. However, as illustrated in the attached graphs, the dissolved hydrocarbons are decreasing regardless of groundwater elevation, confirming biodegradation of the dissolved hydrocarbons.

Graphs were prepared to depict the groundwater elevation and concentrations of TPH-G over time in monitoring wells MW-1 (Graph 1), MW-4 (Graph 2), and MW-5 (Graph 3). The graphs show the effectiveness of the biosparge system in decreasing concentrations of constituents of concern (COCs) in monitoring wells located within or near the radius of influence of the existing biosparge points over time.

The laboratory QA/QC included the use of method blanks to exclude false-positive analyses and the use of laboratory control samples to evaluate the percentage recovery of known analyte spikes. The recovery percentages for all of the sample analytes were within acceptable ranges. COCs were not detected in the analysis of the trip blank. The complete laboratory report, QA/QC data, and the chain-of-custody form are included in Appendix B.

GEOTRACKER DATA ENTRY

As required by Assembly Bill AB2886, Winzler & Kelly has submitted the groundwater level measurements for the March 17, 2005 groundwater sampling event to the GeoTracker database. A copy of the submittal verification is included in Appendix C. Winzler & Kelly will submit the analytical data to the GeoTracker database upon receipt of the EDF report from Analytical Sciences.

Winzler & Kelly will continue to perform quarterly groundwater monitoring, nutrient injection, and sampling activities at the site. The Second Quarter 2005 monitoring and sampling event is scheduled for the end of June 2005.



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CONSULTING ENGINEERS

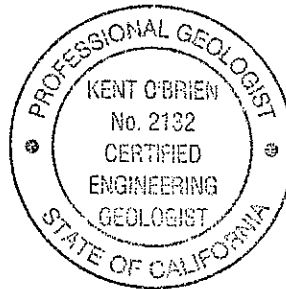
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If you have any questions or comments regarding this project, please contact Ms. Elizabeth Cargay, Project Manager, at (707) 523-1010.

Sincerely,
WINZLER & KELLY

Pon Xayasaeng
Environmental Engineer

Kent O'Brien, PG, CEG
Senior Project Manager



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Attachments

Figures:

- Figure 1 – Vicinity Map
- Figure 2 – Site Map
- Figure 3 – Groundwater Contour Map
- Figure 4 – Petroleum Hydrocarbon Concentrations in Groundwater

Tables:

- Table 1 – Water Level Data and Well Construction Details
- Table 2 – Groundwater Gradient and Flow Direction
- Table 3 – Dissolved Oxygen and Indicator Parameters
- Table 4 – Analytical Results of Nutrient Compounds
- Table 5 – Analytical Results of Groundwater Samples
- Table 6 – Operation and Maintenance Data

Graphs:

- Graph 1 – TPH-G Concentrations vs. Groundwater Elevations Over Time in MW-1
- Graph 2 – TPH-G Concentrations vs. Groundwater Elevations Over Time in MW-4
- Graph 3 – TPH-G Concentrations vs. Groundwater Elevations Over Time in MW-5

Appendices:

- Appendix A – Site-Specific Sampling Procedures
- Appendix B – Analytical Laboratory Report
- Appendix C – GeoTracker Upload Verification



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CONSULTING ENGINEERS

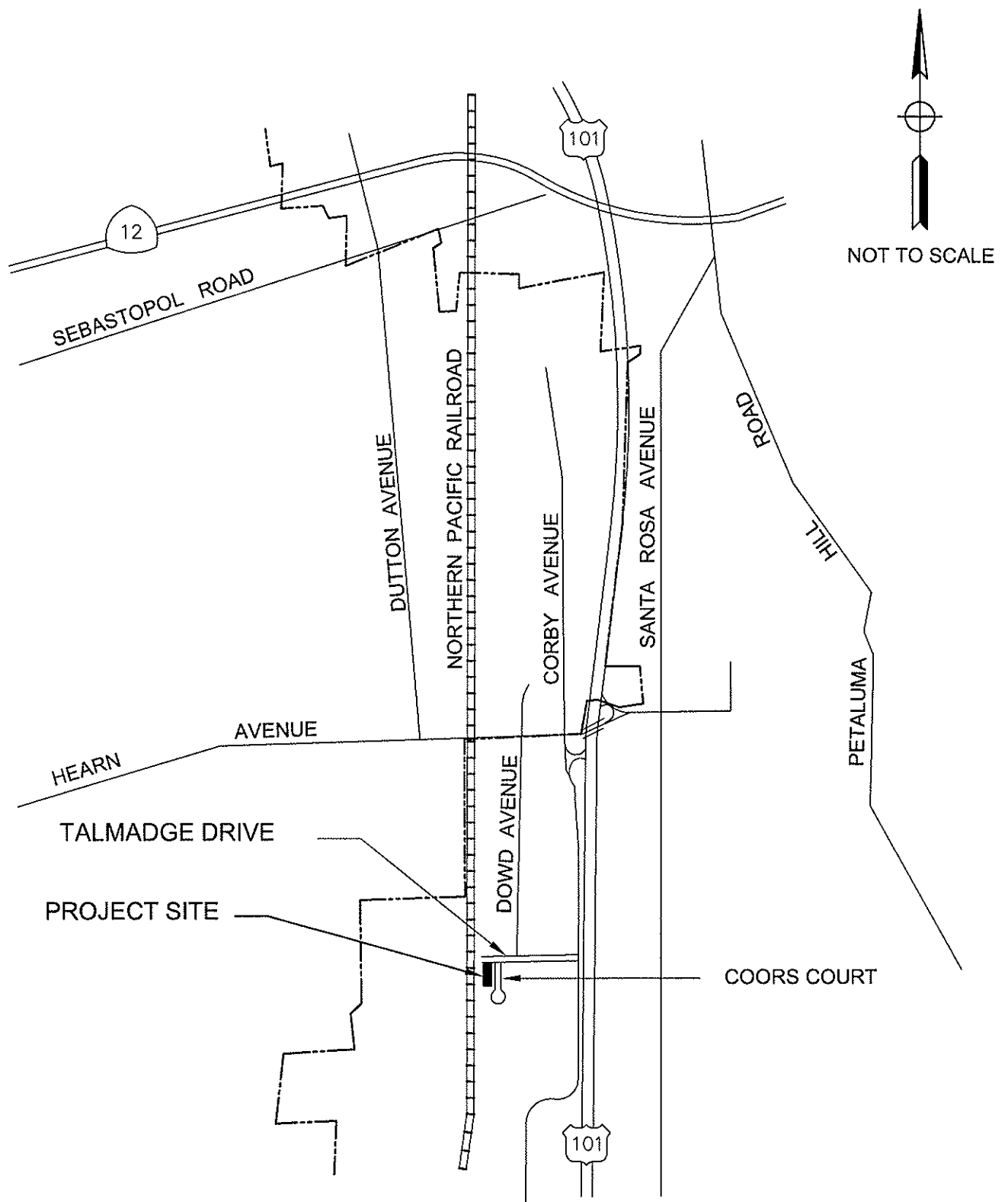
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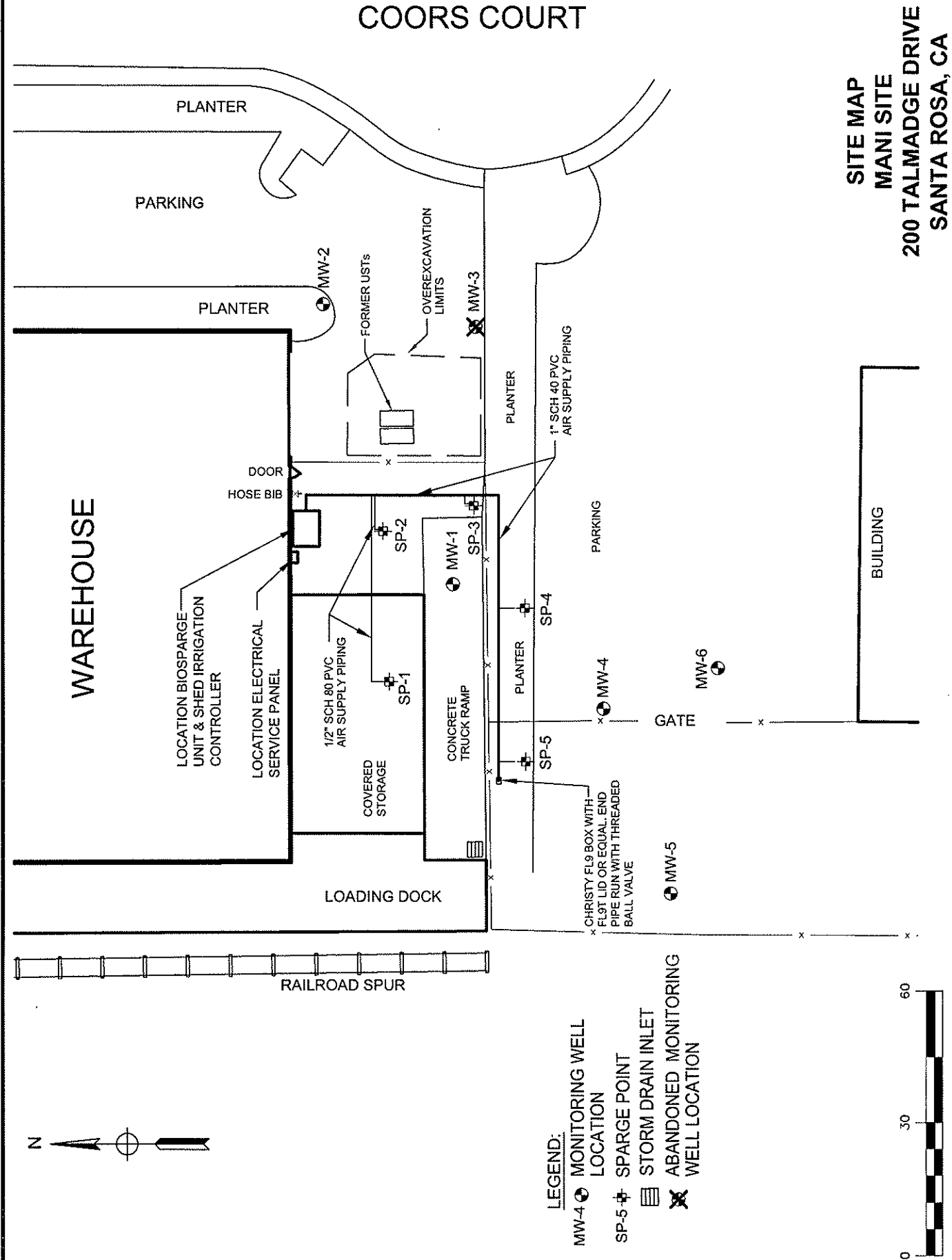
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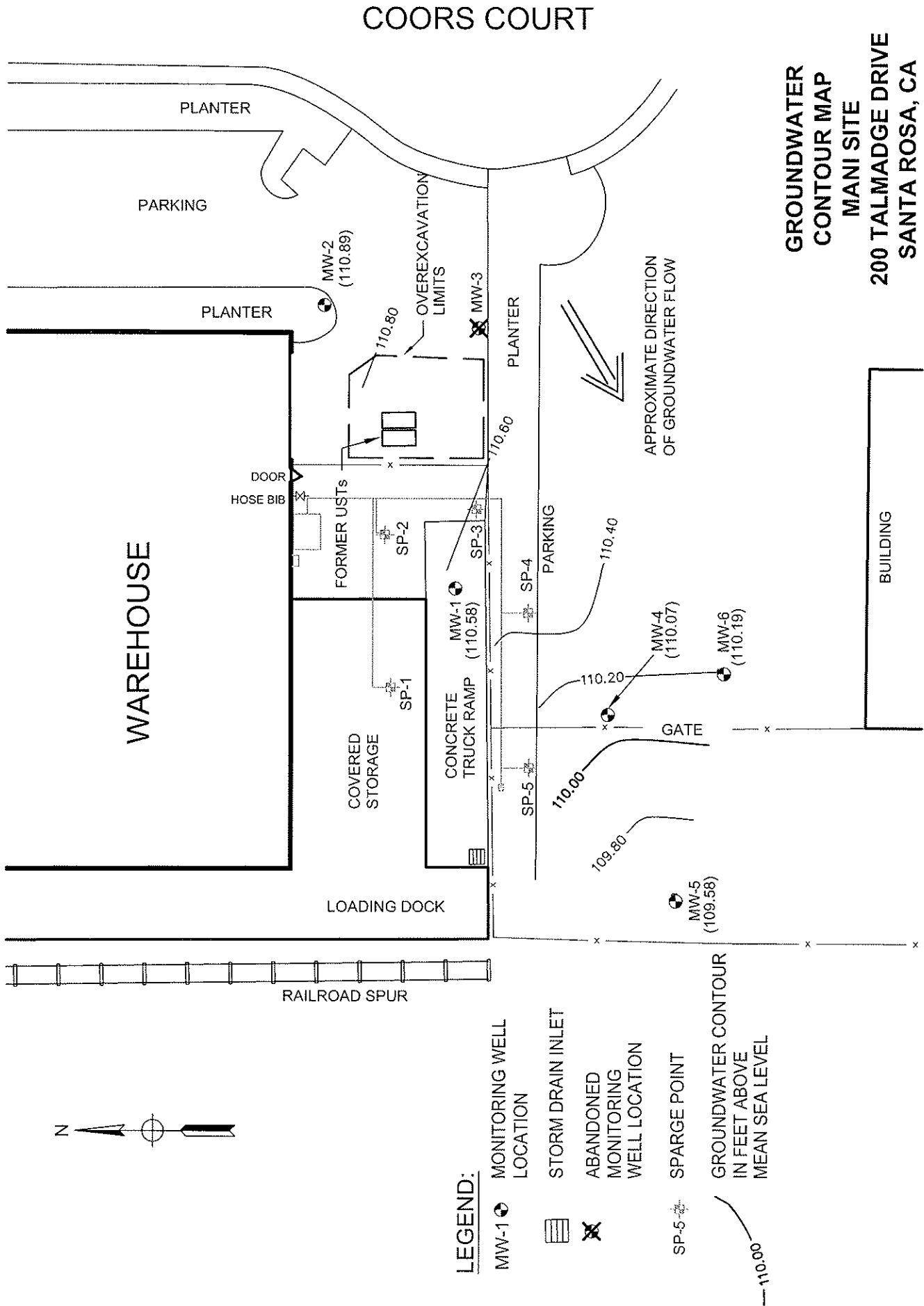
- c: Mr. Jim Tischler, North Coast Regional Water Quality Control Board, 5550 Skylane
Boulevard, Suite A, Santa Rosa, CA 95403
Mr. Don Wehr, 1839 Bella Vista Avenue, Santa Rosa, CA 95403

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VICINITY MAP
MANI SITE
200 TALMADGE DRIVE
SANTA ROSA, CA
FIGURE 1





**GROUNDWATER
CONTOUR MAP**
MANI SITE
200 TALMADGE DRIVE
SANTA ROSA, CA
MARCH 17, 2005

FIGURE 3

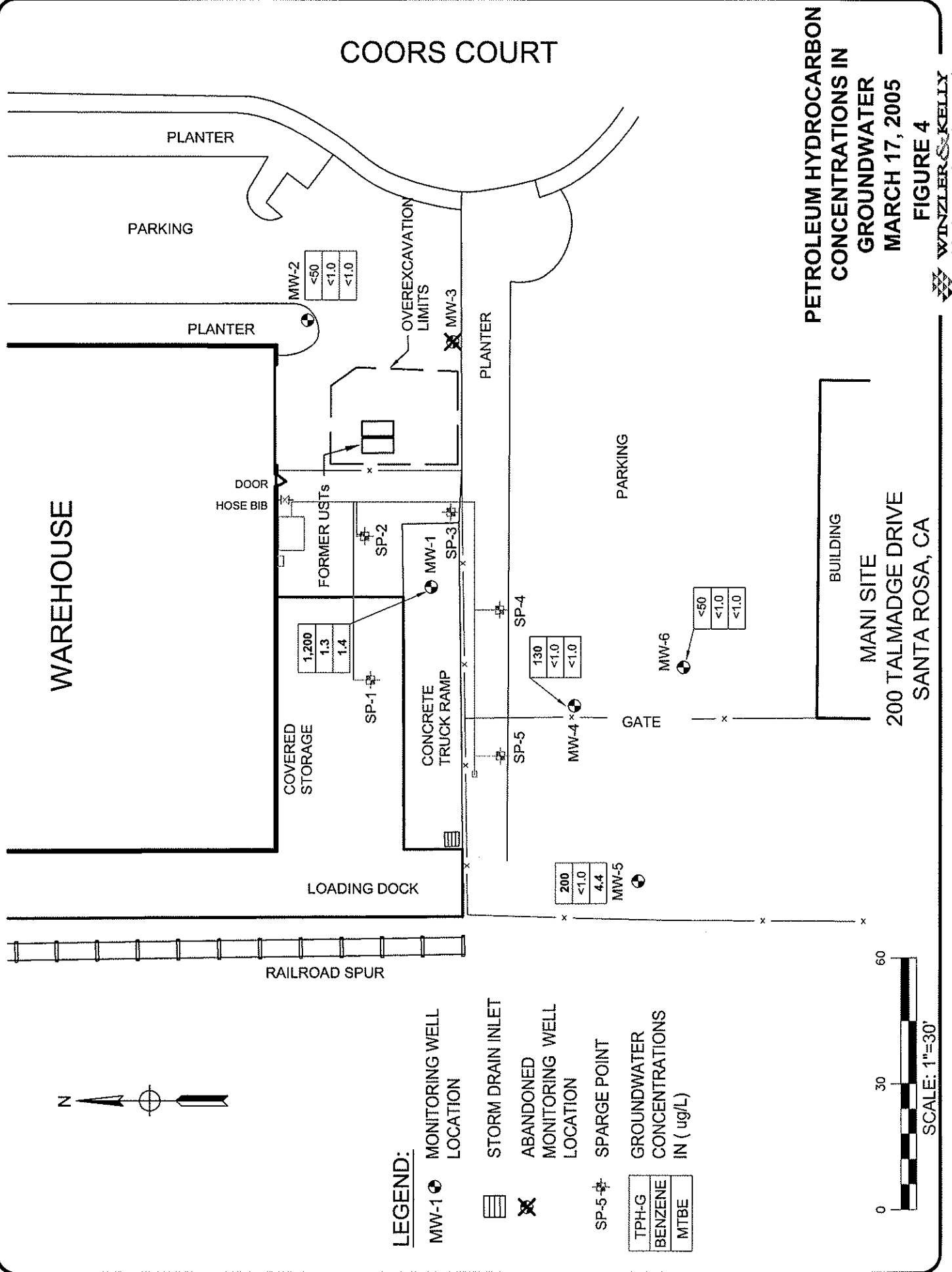


Table 1. Water Level Data and Well Construction Details

Mani Site
200 Talmadge Drive, Santa Rosa, California

Well ID	Date	Groundwater Elevation (Mean Sea Level)		Depth-to-Water		Top of Casing Elevation (Mean Sea Level)	Free Product Thickness	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval
		System On	System Off	System On	System Off					
MW-1	2/2/1995	NM	110.41	NM	8.25	118.66	-	10.0-25.0	8.0-25.0	6.0-8.0
	3/19/1998	NM	111.51	NM	7.15		-			
	9/9/1999	NM	106.31	NM	12.35		-			
	10/11/1999	NM	105.65	NM	13.01		-			
	11/17/1999	NM	105.24	NM	13.42		0.00			
	12/15/1999	NM	105.08	NM	13.58		0.00			
	1/12/2000	NM	104.77	NM	13.89		0.00			
	2/10/2000	NM	106.70	NM	11.96		0.00			
	3/15/2000	NM	111.09	NM	7.57		0.00			
	4/13/2000	NM	109.87	NM	8.79		0.00			
	5/12/2000	NM	109.41	NM	9.25		0.00			
	6/15/2000	NM	108.39	NM	10.27		0.00			
	7/14/2000	NM	107.24	NM	11.42		0.00			
	3/6/2001	NM	108.06	NM	10.63	118.69	0.00			
	6/6/2001	NM	106.70	NM	11.99		0.00			
	9/12/2001	NM	104.58	NM	14.11		0.00			
	12/13/2001	NM	106.28	NM	12.41		0.00			
	3/21/2002	NM	110.54	NM	8.15		0.00			
	6/14/2002	NM	108.09	NM	10.60		NM			
	9/10/2002	NM	105.69	NM	13.00		NM			
	12/11/2002	NM	104.81	NM	13.88		NM			
	3/25/2003	NM	109.76	NM	8.93		NM			
	6/27/2003	NM	109.07	NM	9.62		NM			
	10/1/2003	NM	106.05	NM	12.64		NM			
	12/12/2003	NM	106.24	NM	12.45		NM			
	3/26/2004	NM	110.34	NM	8.35		NM			
	7/9/2004	NM	107.43	NM	11.26		NM			
	9/21/2004	NM	105.63	NM	13.06		NM			
	12/20/04 & 12/21/04	106.15	106.09	12.54	12.60		NM			
	3/16/05 & 3/17/05	110.60	110.58	8.09	8.11		NM			
MW-2	2/2/1995	NM	111.08	NM	9.27	120.35	-	10.0-25.0	8.0-25.0	6.0-8.0
	3/19/1998	NM	112.08	NM	8.27		-			
	9/9/1999	NM	106.72	NM	13.63		-			
	10/11/1999	NM	106.04	NM	14.31		-			
	11/17/1999	NM	105.59	NM	14.76		0.00			
	12/15/1999	NM	105.37	NM	14.98		0.00			
	1/12/2000	NM	105.04	NM	15.31		0.00			
	2/10/2000	NM	107.00	NM	13.35		0.00			
	3/15/2000	NM	111.39	NM	8.96		0.00			
	4/13/2000	NM	110.24	NM	10.11		0.00			
	5/12/2000	NM	109.80	NM	10.55		0.00			
	6/15/2000	NM	108.78	NM	11.57		0.00			
	7/14/2000	NM	107.64	NM	12.71		0.00			
	3/6/2001	NM	108.33	NM	12.04	120.37	0.00			
	6/6/2001	NM	107.05	NM	13.32		0.00			
	9/12/2001	NM	104.89	NM	15.48		0.00			
	12/13/2001	NM	106.54	NM	13.83		0.00			
	3/21/2002	NM	110.80	NM	9.57		0.00			
	6/14/2002	NM	108.45	NM	11.92		NM			
	9/10/2002	NM	106.07	NM	14.30		NM			
	12/11/2002	NM	105.11	NM	15.26		NM			
	3/25/2003	NM	110.10	NM	10.27		NM			
	6/27/2003	NM	109.55	NM	10.82		NM			
	10/1/2003	NM	106.47	NM	13.90		NM			
	12/12/2003	NM	106.62	NM	13.75		NM			
	3/26/2004	NM	110.68	NM	9.69		NM			
	7/9/2004	NM	107.89	NM	12.48		NM			
	9/21/2004	NM	106.04	NM	14.33		NM			
	12/20/04 & 12/21/04	106.49	106.40	13.88	13.97		NM			
	3/16/05 & 3/17/05	110.92	110.89	9.45	9.48		NM			

Table 1. Water Level Data and Well Construction Details

Mani Site
200 Talmadge Drive, Santa Rosa, California

Well ID	Date	Groundwater Elevation (Mean Sea Level)		Depth-to-Water		Top of Casing Elevation (Mean Sea Level)	Free Product Thickness	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval
		System On	System Off	System On	System Off					
MW-3	2/2/1995		110.52		9.47	119.99	-	10.0-25.0	8.0-25.0	6.0-8.0
	3/19/1998		111.41		8.58		-			
	9/9/1999		106.57		13.42		-			
	10/11/1999		105.89		14.10		-			
	11/17/1999		105.46		14.53		0.00			
	12/15/1999		105.25		14.74		0.00			
	1/12/2000		104.95		15.04		0.00			
	2/10/2000		106.88		13.11		0.00			
	3/15/2000		111.30		8.69		0.00			
	4/13/2000		110.12		9.87		0.00			
	5/12/2000		109.66		10.33		0.00			
	6/15/2000		108.64		11.35		0.00			
	7/14/2000		107.49		12.50		0.00			
	3/6/2001		108.24		11.77	120.01	0.00			
	6/6/2001		106.93		13.08		0.00			
	9/12/2001		104.79		15.22		0.00			
	12/13/2001		106.42		13.59		0.00			
		1/24/2002	MW-3 Destroyed							
MW-4	3/21/2002	NM	110.02	NM	7.90	117.92	NM	5.0-20.0	4.0-20.0	3.0-4.0
	6/14/2002	NM	107.27	NM	10.65		NM			
	9/10/2002	NM	104.81	NM	13.11		NM			
	12/11/2002	NM	104.01	NM	13.91		NM			
	3/25/2003	NM	109.16	NM	8.76		NM			
	6/27/2003	NM	108.22	NM	9.70		NM			
	10/1/2003	NM	105.17	NM	12.75		NM			
	12/12/2003	NM	105.36	NM	12.56		NM			
	3/26/2004	NM	109.72	NM	8.20		NM			
	7/9/2004	NM	106.54	NM	11.38		NM			
	9/21/2004	NM	104.81	NM	13.11		NM			
	12/20/04 & 12/21/04	105.52	105.47	12.40	12.45		NM			
	3/16/05 & 3/17/05	110.06	110.07	7.86	7.85		NM			
MW-5	3/21/2002	NM	109.42	NM	8.21	117.63	NM	5.0-20.0	4.0-20.0	3.0-4.0
	6/14/2002	NM	106.53	NM	11.10		NM			
	9/10/2002	NM	103.99	NM	13.64		NM			
	12/11/2002	NM	103.21	NM	14.42		NM			
	3/25/2003	NM	108.53	NM	9.10		NM			
	6/27/2003	NM	107.40	NM	10.23		NM			
	10/1/2003	NM	104.40	NM	13.23		NM			
	12/12/2003	NM	104.65	NM	12.98		NM			
	3/26/2004	NM	109.11	NM	8.52		NM			
	7/9/2004	NM	105.89	NM	11.74		NM			
	9/21/2004	NM	104.08	NM	13.55		NM			
	12/20/04 & 12/21/04	104.97	104.90	12.66	12.73		NM			
	3/16/05 & 3/17/05	109.59	109.58	8.04	8.05		NM			
MW-6	3/21/2002	NM	110.10	NM	7.46	117.56	NM	5.0-20.0	4.0-20.0	3.0-4.0
	6/14/2002	NM	107.52	NM	10.04		NM			
	9/10/2002	NM	105.12	NM	12.44		NM			
	12/11/2002	NM	104.33	NM	13.23		NM			
	3/25/2003	NM	109.29	NM	8.27		NM			
	6/27/2003	NM	108.45	NM	9.11		NM			
	10/1/2003	NM	105.50	NM	12.06		NM			
	12/12/2003	NM	105.67	NM	11.89		NM			
	3/26/2004	NM	109.87	NM	7.69		NM			
	7/9/2004	NM	106.90	NM	10.66		NM			
	9/21/2004	NM	105.13	NM	12.43		NM			
	12/20/04 & 12/21/04	105.72	105.65	11.84	11.91		NM			
	3/16/05 & 3/17/05	110.19	110.19	7.37	7.37		NM			

Table 1. Water Level Data and Well Construction Details

Mani Site
200 Talmadge Drive, Santa Rosa, California

Well ID	Date	Groundwater Elevation (Mean Sea Level)		Depth-to-Water		Top of Casing Elevation (Mean Sea Level)	Free Product Thickness	Screen Interval	Sand Pack Interval	Bentonite/Grout Interval
		System On	System Off	System On	System Off					
SP-1	6/1/2004	NM	NM	NM	11.58	NM	NM	14-17	13.5-19.5	0-13.5
SP-2	6/1/2004	NM	NM	NM	11.41	NM	NM	20-23	19-23	0-19.0
SP-3	6/1/2004	NM	NM	NM	11.07	NM	NM	19-22	18.5-24	0-18.5
SP-4	6/1/2004	NM	NM	NM	10.29	NM	NM	19-22	18.5-22	0-18.5
SP-5	6/1/2004	NM	NM	NM	10.87	NM	NM	14.5-17.5	14-19.5	0-14.0

Abbreviations:

NM = Not Measured

Notes:

Monitoring wells were resurveyed on March 13, 2001, and it was discovered that the top-of-casing elevations for MW-2 and MW-3 had been entered in the reverse order when the table was created. This table reflects the corrected top-of-casing elevations, and corresponding groundwater elevations for MW-2 and MW-3.

Table 2. Groundwater Gradient and Flow Direction

Mani Site
200 Talmadge Drive, Santa Rosa, California

Date	Groundwater Gradient (ft/ft)	Flow Direction	Wells used for Calculating Gradient and Flow Direction
2/2/1995	0.02	South 13 ⁰ West	MW-1, MW-2, MW-3
3/19/1998	0.02	South 5 ⁰ East	MW-1, MW-2, MW-3
9/9/1999	0.01	South 52 ⁰ West	MW-1, MW-2, MW-3
10/11/1999	0.01	South 50 ⁰ West	MW-1, MW-2, MW-3
11/17/1999	0.01	South 51 ⁰ West	MW-1, MW-2, MW-3
12/15/1999	0.01	South 47 ⁰ West	MW-1, MW-2, MW-3
1/12/2000	0.01	South 54 ⁰ West	MW-1, MW-2, MW-3
2/10/2000	0.01	South 49 ⁰ West	MW-1, MW-2, MW-3
3/15/2000	0.01	South 57 ⁰ West	MW-1, MW-2, MW-3
4/13/2000	0.01	South 55 ⁰ West	MW-1, MW-2, MW-3
5/12/2000	0.01	South 52 ⁰ West	MW-1, MW-2, MW-3
6/15/2000	0.01	South 52 ⁰ West	MW-1, MW-2, MW-3
7/14/2000	0.01	South 51 ⁰ West	MW-1, MW-2, MW-3
3/6/2001	0.01	South 55 ⁰ West	MW-1, MW-2, MW-3
6/6/2001	0.01	South 55 ⁰ West	MW-1, MW-2, MW-3
9/12/2001	0.01	South 56 ⁰ West	MW-1, MW-2, MW-3
12/13/2001	0.01	South 47 ⁰ West	MW-1, MW-2, MW-3
3/21/2002	0.01	West-Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
6/14/2002	0.02	West-Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
9/10/2002	0.02	Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
12/11/2002	0.02	West-Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
3/25/2003	0.01	Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
6/27/2003	0.01	Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
10/1/2003	0.02	Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
12/12/2003	0.02	Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
3/26/2004	0.02	Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
7/9/2004	0.01	Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
9/21/2004	0.02	Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
12/21/2004	0.01	Southwest	MW-1, MW-2, MW-4, MW-5, MW-6
3/17/2005	0.008	Southwest	MW-1, MW-2, MW-4, MW-5, MW-6

Note: Monitoring wells were resurveyed on March 13, 2001, and it was discovered that the top-of-casing elevations for MW-2 and MW-3 had been entered in the reverse order when the table was created. This table reflects the corrected top-of-casing elevations, and corresponding groundwater elevations for MW-2 and MW-3. Elevations are relative to mean sea level.

Table 3. Dissolved Oxygen and Indicator Parameters

Mani Site
200 Talmadge Drive, Santa Rosa, California

Well ID	Sample Date ^a	Dissolved Oxygen (mg/L)	ORP (mV)	pH	Conductivity ^b (uS/cm)	Temperature (°F)
MW-1	9/10/2002	---	---	6.74	502	70.9
	12/11/2002	---	---	6.85	819	65.7
	3/25/2003	0.28	---	7.00	1053	65.2
	6/27/2003	0.28	-108	6.83	839	64.4
	10/1/2003	0.28	-35	7.00	883	65.8
	12/12/2003	---	-54	6.81	1007	66.0
	3/26/2004	---	-64	6.76	1039	64.0
	7/9/2004	0.50	-68	6.70	921	65.1
	Biosparge System Start-up After 7/9/04 Monitoring Event					
	9/20/04 & 9/21/04	0.33	-34	6.97	825	66.7
	12/20/04 & 12/21/04	0.74	-54	6.91	891	66.9
	2/24/2005	--- ^c	---	---	---	---
	3/16/05 & 3/17/05	9.09	4	6.84	835	65.1
MW-2	9/10/2002	---	---	Not Sampled		
	12/11/2002	---	---	Not Sampled		
	3/25/2003	0.41	---	6.50	650	66.7
	6/27/2003	0.70	147	6.62	612	65.8
	10/1/2003	0.92	205	6.63	648	67.5
	12/12/2003	---	232	6.63	655	68.2
	3/26/2004	---	250	6.26	612	65.5
	7/9/2004	1.88	222	6.50	578	66.4
	Biosparge System Start-up After 7/9/04 Monitoring Event					
	9/20/04 & 9/21/04	0.58	173	6.64	572	68.4
	12/20/04 & 12/21/04	0.50	228	6.42	587	68.2
	2/24/2005	0.78	---	---	---	---
	3/16/05 & 3/17/05	0.64	203	6.30	619	66.0
MW-3	Well Destroyed					
MW-4	9/10/2002	---	---	Not Measured ^d		
	12/11/2002	---	---	6.69	732	66.3
	3/25/2003	0.27	---	7.00	868	64.7
	6/27/2003	0.20	-94	6.60	820	66.4
	10/1/2003	0.29	-19	6.74	802	69.6
	12/12/2003	---	-533	6.75	826	67.8
	3/26/2004	---	2	6.55	886	64.0
	7/9/2004	3.31	-60	6.60	740	67.5
	Biosparge System Start-up After 7/9/04 Monitoring Event					
	9/20/04 & 9/21/04	0.35	-39	7.03	633	71.8
	12/20/04 & 12/21/04	0.69	-1	7.02	638	69.6
	2/24/2005	0.30	---	---	---	---
	3/16/05 & 3/17/05	4.55	17	6.77	552	64.8
MW-5	9/10/2002	---	---	6.96	659	70.9
	12/11/2002	---	---	6.62	635	66.6
	3/25/2003	0.26	---	7.00	799	64.0
	6/27/2003	0.21	-43	6.57	774	65.3
	10/1/2003	0.30	19	6.67	732	67.8
	12/12/2003	---	31	6.67	735	67.3
	3/26/2004	---	41	6.54	803	62.8
	7/9/2004	0.45	7	6.50	726	65.5
	Biosparge System Start-up After 7/9/04 Monitoring Event					
	9/20/04 & 9/21/04	0.27	27	6.65	653	68.5
	12/20/04 & 12/21/04	0.59	45	6.61	639	66.7
	2/24/2005	0.27	---	---	---	---
	3/16/05 & 3/17/05	0.60	530	6.56	598	63.1

Table 3. Dissolved Oxygen and Indicator Parameters

Mani Site
200 Talmadge Drive, Santa Rosa, California

Well ID	Sample Date ^a	Dissolved Oxygen (mg/L)	ORP (mV)	pH	Conductivity ^b (uS/cm)	Temperature (°F)
MW-6	9/10/2002	---	---	6.88	612	69.9
	12/11/2002	---	---	6.44	563	68.2
	3/25/2003	0.28	---	7.00	653	65.5
	6/27/2003	0.39	178	6.61	610	66.9
	10/1/2003	0.58	208	6.69	646	69.4
	12/12/2003	---	263	6.68	661	69.3
	3/26/2004	---	222	6.44	605	64.4
	7/9/2004	0.54	225	6.51	580	67.5
	Biosparge System Start-up After 7/9/04 Monitoring Event					
	9/20/04 & 9/21/04	0.56	176	6.57	572	70.2
	12/20/04 & 12/21/04	3.10	212	6.52	558	69.3
	2/24/2005	3.74	---	---	---	---
	3/16/05 & 3/17/05	4.70	179	6.43	560	65.3

Notes:

a = Tabulated indicator parameters were the last to be recorded from each well.

b = The conductivity was incorrectly reported for the 9/10/2002, 12/11/2002, and 3/25/2003 reporting periods. The decimal points have been moved to show the correct values.

c = DO was not measured because well was covered by a truck that could not be moved at the time DO was measured.

d = Well de-watered after purging 0.75 gallons. Indicator parameters were not measured.

Abbreviations:

mg/L = milligrams per liter

ORP = oxidation/reduction potential

mV = millivolts

uS/cm = microSiemens per centimeter

°F = degrees Fahrenheit

--- = Measurements not taken

Table 4. Analytical Results of Nutrient Compounds

Mani Site

200 Talmadge Drive, Santa Rosa, California

Well ID	Sample Date	Analytic Method - EPA 300 (IC)			
		Nitrate as Nitrogen (NO ₃ ⁻¹ -N)	Nitrite as Nitrogen (NO ₂ ⁻¹ -N)	Ammonia as Nitrogen (NH ₄ ⁻¹ -N)	Phosphate (PO ₄)
		mg/L			
MW-1	5/8/2003	0.99	NA	NA	<2.0
	7/9/2004	<0.10	<0.10	<0.15	<0.50
	Biosparge System Start-up After 7/9/04 Monitoring Event				
	9/21/2004	<0.15	<0.15	0.37	<2.0
	First Nutrient Injection 9/22/04				
	11/9/2004	<0.50	NA	NA	NA
	12/21/2004	<0.10	<0.10	<0.2	<0.50
	3/17/2005	<0.15	<0.15	<0.15	<1.0
MW-2	5/8/2003	6.7	NA	NA	<2.0
	7/9/2004	1.4	<0.10	<0.15	<0.50
	Biosparge System Start-up After 7/9/04 Monitoring Event				
	9/21/2004	1.3	<0.15	<0.15	<2.0
	First Nutrient Injection 9/22/04				
	11/9/2004	5.9	NA	NA	NA
	12/21/2004	1.2	<0.10	<0.2	<0.50
	3/17/2005	2.0	<0.15	<0.15	<1.0
MW-4	7/9/2004	<0.10	<0.10	<0.15	<0.50
	Biosparge System Start-up After 7/9/04 Monitoring Event				
	9/21/2004	0.17	<0.15	<0.15	<2.0
	First Nutrient Injection 9/22/04				
	11/9/2004	<0.50	NA	NA	NA
	12/21/2004	<0.10	<0.10	<0.2	<0.50
	3/17/2005	<0.15	<0.15	<0.15	<1.0
MW-5	7/9/2004	<0.10	<0.10	<0.15	<0.50
	Biosparge System Start-up After 7/9/04 Monitoring Event				
	9/21/2004	<0.15	<0.15	<0.15	<2.0
	First Nutrient Injection 9/22/04				
	11/9/2004	3.0	NA	NA	NA
	12/21/2004	<0.10	<0.10	<0.2	<0.50
	3/17/2005	<0.15	<0.15	<0.15	<1.0
MW-6	5/8/2003	5.8	NA	NA	<2.0
	7/9/2004	1.4	<0.10	<0.15	<0.50
	Biosparge System Start-up After 7/9/04 Monitoring Event				
	9/21/2004	1.2	<0.15	0.30	<2.0
	First Nutrient Injection 9/22/04				
	11/9/2004	5.7	NA	NA	NA
	12/21/2004	1.2	<0.10	<0.2	<0.50
	3/17/2005	1.8	<0.15	<0.15	<1.0

Abbreviations:

mg/L = milligrams per liter

NA = Not analyzed

Note: 9/21/04 data is considered baseline for pre-nutrient injection. The first nutrient injection was completed 9/22/04, after 3rd quarter sampling.

Table 5. Analytical Results of Groundwater Samples

Mani Site

200 Talmadge Drive, Santa Rosa, California

Well ID	Date Sampled	Analytic Methods	TPH-G	TPH-D	B	T	E	X	MTBE	DIPE	ETBE	TAME	TBA	EDC / EDB
			ug/L											
MW-1	2/2/95	8015M / 8020	32,000	2600 ^b	3,600	6,600	1,300	6,100	NA	ND	ND	ND	ND	NA
	4/6/95	8015M / 8020	10,000	NA	1,400	1,500	560	1,600	NA	ND	ND	ND	ND	NA
	3/19/1998	5030/602/8260	30,000	1,400	1,300	1,000	770	2,900	360	ND	ND	ND	ND	NA
	9/9/1999	5030A/8260B/8015M	19,000	1,600	570	220	360	1,100	140	ND	ND	ND	ND	NA
	12/15/1999	5030A/8260B/8015M	13,000	2,600	1,400	410	1,400	3,400	280	ND	ND	ND	ND	NA
	3/15/2000	5030A/8260B/8015M	23,000	1,600	920	360	970	2,600	120	ND	ND	ND	ND	<50
	7/14/2000	5030A/8260B/8015M	22,000	880	1,300	240	1,400	3,100	200	ND	ND	ND	ND	<50
	3/6/2001	5030A/8260B/8015M	25,000	2,900	1,700	310	2,200	4,400	260	ND	ND	ND	ND	<0.50
	6/6/2001	5030A/8260B/8015M	16,000	470 ^c	980	140	1,300	1,800	200	ND	ND	ND	ND	<50
	9/12/2001	5030A/8260B/8015M	17,000	1,100 ^c	730	96	980	1,800	240	ND	ND	ND	31	<0.50
	12/13/2001	5030A/8260B/8015M	29,000	4,100 ^c	1,400	560	1,900	4,000	120	ND	ND	ND	ND	<5.0
	3/21/2002	5030A/8260B/8015M	6,400	1,700 ^c	400	200	740	1,440	28	<10	<10	<10	<10	<10
	6/14/2002	5030A/8260B/8015M	12,000	2000 ^d	370	150	860	1,700	45	<10	<10	<10	<200	NA
	9/10/2002	5030A/8260B/8015M	11,000	3800 ^d	140	85	500	940	38	<5.0	<5.0	<5.0	<100	NA
	12/11/2002	5030/8015M/8260B	9,100	3200 ^d	280	120	600	840	64	<10	<10	<10	<250	NA
	3/25/2003	5030/8015M/8260B	8,500	NA	160	210	860	1,780	33	<10	<10	<10	<250	<10
	5/8/2003	5030/8015M/8260B	9,900	NA	250	450	790	2,020	<10	<10	<10	<10	<250	<10
	6/27/2003	5030/8015M/8260B	5,800	NA	140	220	580	1,350	19	<10	<10	<10	<25	<10
	10/1/2003	5030/8015M/8260B	8,100	NA	180	330	1,100	2,700	36	<10	<10	<10	<250	<10
	12/12/2003	5030/8015M/8260B	23,000	NA	230	380	1,800	5,290	33	<20	<20	<20	<500	<20
	3/26/2004 ^f	5030/8015M/8260B	10,000	1,800 ^d	92	140	900	2,200	20	<1.0	<1.0	<1.0	<25	NA
	7/9/2004	5030/8015M/8260B	4,900	1,600 ^d	40	38	370	880	22	<10	<10	<10	<250	NA
	Biosparge System Start-up After 7/9/04 Monitoring Event													
	9/21/2004	5030/8015M/8260B	4,300	420 ^d	16	13	150	281	<10	<10	<10	<10	<250	NA
	12/21/2004	5030/8015M/8260B	4,500	1,200 ^d	11	11	37	167	<10	<10	<10	<10	<250	NA
	3/17/2005	5030/8015M/8260B	1,200	290 ^d	1.3	1.6	25	66	1.4	<1.0	<1.0	<1.0	<25	NA
MW-2	2/2/95 ^a	8015M / 8020	<50.0	110 ^e	<0.5	1.2	<0.5	<0.5	NA	ND	ND	ND	ND	NA
	3/19/1995	5030/602/8260	<50.0	<50	<0.3	<0.3	<0.5	<0.5	NA	ND	ND	ND	ND	NA
	9/9/1999	5030A/8260B/8015M	<50.0	<50	<0.3	<0.3	<0.5	<0.5	ND	ND	ND	ND	ND	NA
	12/15/1999	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	NA
	3/15/2000	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	<0.5
	7/14/2000	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	<0.5
	3/6/2001	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	<0.50
	6/6/2001	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	<0.50
	9/12/2001	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	<0.50
	12/13/2001	Not Sampled												
	3/21/2002	5030A/8260B/8015M	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
	6/14/2002	Not Sampled												
	9/10/2002	Not Sampled												
	3/25/2003	5030/8015M/8260B	<50	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
	6/27/2003	5030/8015M/8260B	<50	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
	10/1/2003	5030/8015M/8260B	<50	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
	12/12/2003	5030/8015M/8260B	<50	NA	<1.0	2.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
	3/26/2004 ^f	5030/8015M/8260B	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	7/9/2004	5030/8015M/8260B	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	Biosparge System Start-up After 7/9/04 Monitoring Event													
	9/21/2004	5030/8015M/8260B	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	12/21/2004	5030/8015M/8260B	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	3/17/2005	5030/8015M/8260B	<50	<50	<1.0	<1.0	2.1	4.1	<1.0	<1.0	<1.0	<1.0	<25	NA
Water Quality Objectives in ug/L			<50	<50	<1	<42	<29	<17	<5	None	None	None	<12	<0.5

Table 5. Analytical Results of Groundwater Samples

Mani Site

200 Talmadge Drive, Santa Rosa, California

Well ID	Date Sampled	Analytic Methods	TPH-G	TPH-D	B	T	E	X	MTBE	DIPE	ETBE	TAME	TBA	EDC / EDB
			ug/L											
MW-3	2/2/95 ^a	8015M / 8020	<50.0	460	5.4	12	1.3	12.0	NA	NA	NA	NA	NA	NA
	3/19/1995	5030/602/8260	<50.0	<50	<0.3	<0.3	<0.5	<0.5	NA	NA	NA	NA	NA	NA
	9/9/1999	5030A/8260B/8015M	<50.0	<50	<0.3	<0.3	<0.5	<0.5	ND	ND	ND	ND	ND	NA
	12/15/1999	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	NA
	3/15/2000	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	<0.5
	7/14/2000	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	<0.5
	3/6/2001	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	<0.50
	6/6/2001	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	<0.50
	9/12/2001	5030A/8260B/8015M	<50	<50	<0.30	<0.30	<0.50	<0.50	<0.50	ND	ND	ND	ND	<0.50
	12/13/2001	Not Sampled												
	1/24/2002	Well Destroyed												
MW-4	3/21/2002	5030A/8260B/8015M	420	120 ^c	4.1	<1.0	5.4	<1.0	43	<1.0	<1.0	<1.0	<25	<1.0
	6/14/2002	5030A/8260B/8015M	550	110 ^d	<1.0	<1.0	3.4	<1.0	33	<1.0	<1.0	<1.0	<25	NA
	9/10/2002	5030A/8260B/8015M	1,300	200 ^d	6.6	<1.0	38	<1.0	27	<1.0	<1.0	<1.0	<25	NA
	12/11/2002	5030/8015M/8260B	510	230 ^d	2.1	<1.0	13	<1.0	28	<1.0	<1.0	<1.0	<25	NA
	3/25/2003	5030/8015M/8260B	410	NA	<1.0	<1.0	1.7	<1.0	24	<1.0	<1.0	<1.0	<25	<1.0
	6/27/2003	5030/8015M/8260B	410	NA	<1.0	<1.0	1.5	<1.0	9.8	<1.0	<1.0	<1.0	<25	<1.0
	10/1/2003	5030/8015M/8260B	350	NA	<1.0	<1.0	<1.0	<1.0	9.5	<1.0	<1.0	<1.0	<25	<1.0
	12/12/2003	5030/8015M/8260B	490	NA	<1.0	<1.0	<1.0	<1.0	11	<1.0	<1.0	<1.0	<25	<1.0
	3/26/2004 ^f	5030/8015M/8260B	290	<50	<1.0	<1.0	<1.0	<1.0	9.0	<1.0	<1.0	<1.0	<25	NA
	7/9/2004	5030/8015M/8260B	870	120 ^d	3.5	<1.0	2.3	10.3	6.4	<1.0	<1.0	<1.0	<25	NA
	Biosparge System Start-up After 7/9/04 Monitoring Event													
	9/21/2004	5030/8015M/8260B	650	91 ^d	<1.0	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<25	NA
	12/21/2004	5030/8015M/8260B	600	75 ^d	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	3/17/2005	5030/8015M/8260B	130	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
MW-5	3/21/2002	5030A/8260B/8015M	400	<50	<1.0	<1.0	<1.0	<1.0	32	<1.0	<1.0	<1.0	<25	<1.0
	6/14/2002	5030A/8260B/8015M	<50	<50	<1.0	<1.0	<1.0	<1.0	31	<1.0	<1.0	<1.0	<25	NA
	9/10/2002	5030A/8260B/8015M	350	<50	<1.0	<1.0	<1.0	<1.0	11	<1.0	<1.0	<1.0	<25	NA
	12/11/2002	5030/8015M/8260B	390	<50	<1.0	<1.0	<1.0	<1.0	21	<1.0	<1.0	<1.0	<25	NA
	3/25/2003	5030/8015M/8260B	380	NA	<1.0	<1.0	<1.0	<1.0	21	<1.0	<1.0	<1.0	<25	<1.0
	6/27/2003	5030/8015M/8260B	290	NA	<1.0	<1.0	<1.0	<1.0	11	<1.0	<1.0	<1.0	<25	<1.0
	10/1/2003	5030/8015M/8260B	260	NA	<1.0	<1.0	<1.0	<1.0	5.9	<1.0	<1.0	<1.0	<25	<1.0
	12/12/2003	5030/8015M/8260B	210	NA	<1.0	<1.0	<1.0	<1.0	6.5	<1.0	<1.0	<1.0	<25	<1.0
	3/26/2004 ^f	5030/8015M/8260B	270	<50	<1.0	<1.0	<1.0	<1.0	9.9	<1.0	<1.0	<1.0	<25	NA
	7/9/2004	5030/8015M/8260B	280	<50	<1.0	<1.0	<1.0	<1.0	7.1	<1.0	<1.0	<1.0	<25	NA
	Biosparge System Start-up After 7/9/04 Monitoring Event													
	9/21/2004	5030/8015M/8260B	230	<50	<1.0	<1.0	<1.0	<1.0	3.7	<1.0	<1.0	<1.0	<25	NA
	12/21/2004	5030/8015M/8260B	210	<50	<1.0	<1.0	<1.0	<1.0	3.4	<1.0	<1.0	<1.0	<25	NA
	3/17/2005	5030/8015M/8260B	200	<50	<1.0	<1.0	<1.0	<1.0	4.4	<1.0	<1.0	<1.0	<25	NA
MW-6	3/21/2002	5030A/8260B/8015M	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
	6/14/2002	5030A/8260B/8015M	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	9/10/2002	5030A/8260B/8015M	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	12/11/2002	5030/8015M/8260B	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	3/25/2003	5030/8015M/8260B	<50	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
	6/27/2003	5030/8015M/8260B	<50	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
	10/1/2003	5030/8015M/8260B	<50	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
	12/12/2003	5030/8015M/8260B	260	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
	3/26/2004 ^f	5030/8015M/8260B	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	7/9/2004	5030/8015M/8260B	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	Biosparge System Start-up After 7/9/04 Monitoring Event													
	9/21/2004	5030/8015M/8260B	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	12/21/2004	5030/8015M/8260B	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
	3/17/2005	5030/8015M/8260B	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	NA
Water Quality Objectives in ug/L			<50	<50	<1	<42	<29	<17	<5	None	None	None	<12	<0.5

Table 5. Analytical Results of Groundwater Samples

Mani Site

200 Talmadge Drive, Santa Rosa, California

Well ID	Date Sampled	Analytic Methods	TPH-G	TPH-D	B	T	E	X	MTBE	DIPE	ETBE	TAME	TBA	EDC / EDB
			ug/L											
SP-1	6/1/2004	EPA 5030/8015M/8260B	<50	NA	<1.0 ^a	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
SP-2	6/1/2004	EPA 5030/8015M/8260B	<50	NA	<1.0 ^a	<1.0	<1.0	<1.0	5.7	<1.0	<1.0	<1.0	<25	<1.0
SP-3	6/1/2004	EPA 5030/8015M/8260B	4,100	NA	<5.0	<5.0	11	240	<5.0	<5.0	<5.0	<5.0	<100	<5.0
SP-4	6/1/2004	EPA 5030/8015M/8260B	3,600	NA	15	<5.0	81	127	10	<1.0	<1.0	<1.0	<25	<5.0
SP-5	6/1/2004	EPA 5030/8015M/8260B	<50	NA	<1.0	<1.0	<1.0	<1.0	5.1	<1.0	<1.0	<1.0	<25	<1.0
Trip Blank	3/19/1998	5030 / 602	<50	NA	<0.3	<0.3	<0.5	<0.5	NA	NA	NA	NA	NA	NA
	9/9/1999	5030A / 8020	<50	NA	<0.3	<0.3	<0.5	<0.5	NA	NA	NA	NA	NA	NA
	12/15/1999	8260B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/15/2000	5030A / 8020	<50	NA	<0.3	<0.3	<0.5	<0.5	NA	NA	NA	NA	NA	NA
	7/14/2000	5030A / 8020	<50	NA	<0.3	<0.3	<0.5	<0.5	NA	NA	NA	NA	NA	NA
	3/6/2001	5030A / 8020	<50	NA	<0.30	<0.30	<0.50	<0.50	NA	NA	NA	NA	NA	NA
	6/6/2001	5030A / 8020	<50	NA	<0.30	<0.30	<0.50	<0.50	NA	NA	NA	NA	NA	NA
	9/12/2001	5030A / 8020	<50	NA	<0.30	<0.30	<0.50	<0.50	NA	NA	NA	NA	NA	NA
	12/13/2001	5030A / 8020	<50	NA	<0.30	<0.30	<0.50	<0.50	NA	NA	NA	NA	NA	NA
	3/21/2002	8260	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0
	6/14/2002	8015M/8020	<50	NA	<0.5	<0.5	<0.5	<1.5	NA	NA	NA	NA	NA	NA
	9/9/2002	8015M/8020	<50	NA	<0.5	<0.5	<0.5	<1.5	NA	NA	NA	NA	NA	NA
	12/11/2002	5030/8015M/8020	<50	NA	<0.5	<0.5	<0.5	<1.5	<2.5	NA	NA	NA	NA	NA
	3/25/2003	5030/8015M/8020	<50	NA	<0.5	<0.5	<0.5	<1.5	NA	NA	NA	NA	NA	NA
	6/27/2003	5030/8015M/8020	<50	NA	<0.5	<0.5	<0.5	<1.5	NA	NA	NA	NA	NA	NA
	10/1/2003	5030/8015M/8020	<50	NA	<0.5	<0.5	<0.5	<1.5	NA	NA	NA	NA	NA	NA
	12/12/2003	5030/8015M/8020	<50	NA	<0.5	<0.5	<0.5	<1.5	NA	NA	NA	NA	NA	NA
	3/26/2004	5030/8015M/8260B	<50	NA	<0.5	<0.5	<0.5	<1.5	NA	NA	NA	NA	NA	NA
Water Quality Objectives in ug/L			<50	<50	<1	<42	<29	<17	<5	None	None	None	<12	<0.5

Notes: ^a = Sampled by Sierra Environmental Services

^b = Laboratory reports the positive result appears to be both a heavier and lighter hydrocarbon than diesel.

^c = The Laboratory reports that results in the diesel range are primarily due to overlap from a gasoline range product.

^d = The chromatogram does not exhibit a chromatographic pattern characteristic of diesel. Higher boiling point constituents of weathered gasoline are present.

^e = The laboratory reports the positive result appears to be a heavier hydrocarbon than diesel.

^f = 3/26/04 samples were analyzed for TPH-MO by 8015M. Results were ND<200 ug/L.

^g = Tetrahydrofuran (THF) was detected and is the primary ingredient in PVC pipe glue and consequently may not be a persistent contaminant.

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline
 TPH-D = Total petroleum hydrocarbons as diesel
 B = Benzene
 T = Toluene
 E = Ethyl benzene
 X = Total xylenes
 EDC = 1,2-dichloroethane
 EDB = 1,2-debromoethane
 NA = Not analyzed
 ND = Not detected above laboratory detection limits

The 5 Oxygenates Include:

MTBE = Methyl tert-butyl ether
 DIPE = Di-isopropyl ether
 ETBE = Ethyl tert-butyl ether
 TAME = Tert-amyl methyl ether
 TBA = Tert-butyl alcohol

Analytic Methods:

5030 = EPA Method GCFID/5030 for TPH-G
 602 = EPA Method 602 for BTEX
 8020 = EPA Method for MTBE
 8260B = EPA Method 8260 for BTEX / Oxygenates
 8015M = EPA method 8015M for Diesel

Table 6. Operation and Maintenance Data

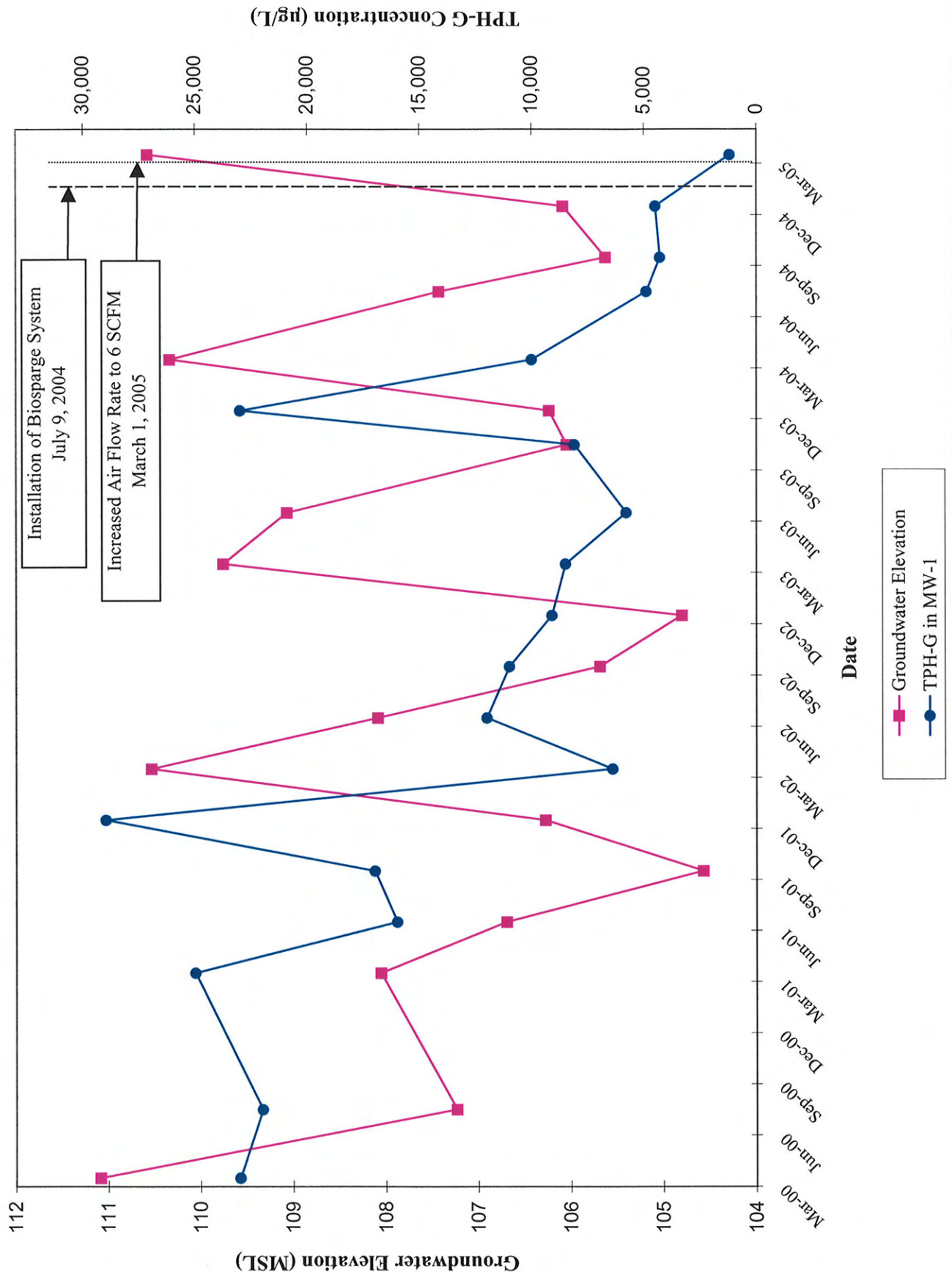
Mani Site
200 Talmadge Drive, Santa Rosa, CA

Date	Sequencing Time Per Point	System Hour Meter Reading	Pressure Reading (psi)	S.C.F.M.
5/11/04 & 5/12/04	Drilled and installed five biosparge points			
5/26/04 & 5/27/04	Developed five biosparge points			
06/01/04	Sampled biosparge points			
06/09/04	System start-up			
06/16/04	Tested program to run sparge points			
8/24/2004	60 Min	938.2	20	2.0
9/20/2004	60 Min	1586.2	21	2.2
9/22/2004	First Nutrient Injection			
10/6/2004	60 Min	1921.2	21	2.2
10/15/2004	60 Min	2137.5	22	2.2
11/2/2004	60 Min	2570.9	20	2.2
11/15/2004	60 Min	2882.5	20	2.6
11/17/2004	60 Min	2925.5	20	2.5
11/24/2004	Increased oxygen flow to each sparge point due to low DO levels.			
	60 Min	NM	NM	3.3
1/12/2005	Repaired SP-3 and SP-5 well base connections because they were loose. Replaced all sparge point caps.			
	60 Min	4246.2	20	3.4
1/14/2005	60 Min	5041.9	20	3.0
1/20/2005	Sealed SP-2 and SP-4 connections. Check back pressure at SP-3. Repaired SP-5 air hose leakage. Tighten tee on SP-1.			
2/1/2005	60 Min	NM ^a	20	3.0
2/24/2005	Measured DO concentrations to verify that DO concentrations were increasing as a result of flow increase and repairs.			
3/1/2005	Test back pressure vs. flow for each sparge point and increase air flow rate to increase DO concentrations in each sparge point.			
	60 Min	5398.2	20	6.0
3/17/2005	60 Min	5762.7	20	6.0
3/22/2005	60 Min	5882.8	20	6.0
3/24/2005	Adjusted compressor max and min settings from 42-60 psi to 52-70 psi. Replaced all air tubing for each sparge point to a more flexible tubing.			
3/30/2005	60 Min	6073.2	20	5.0

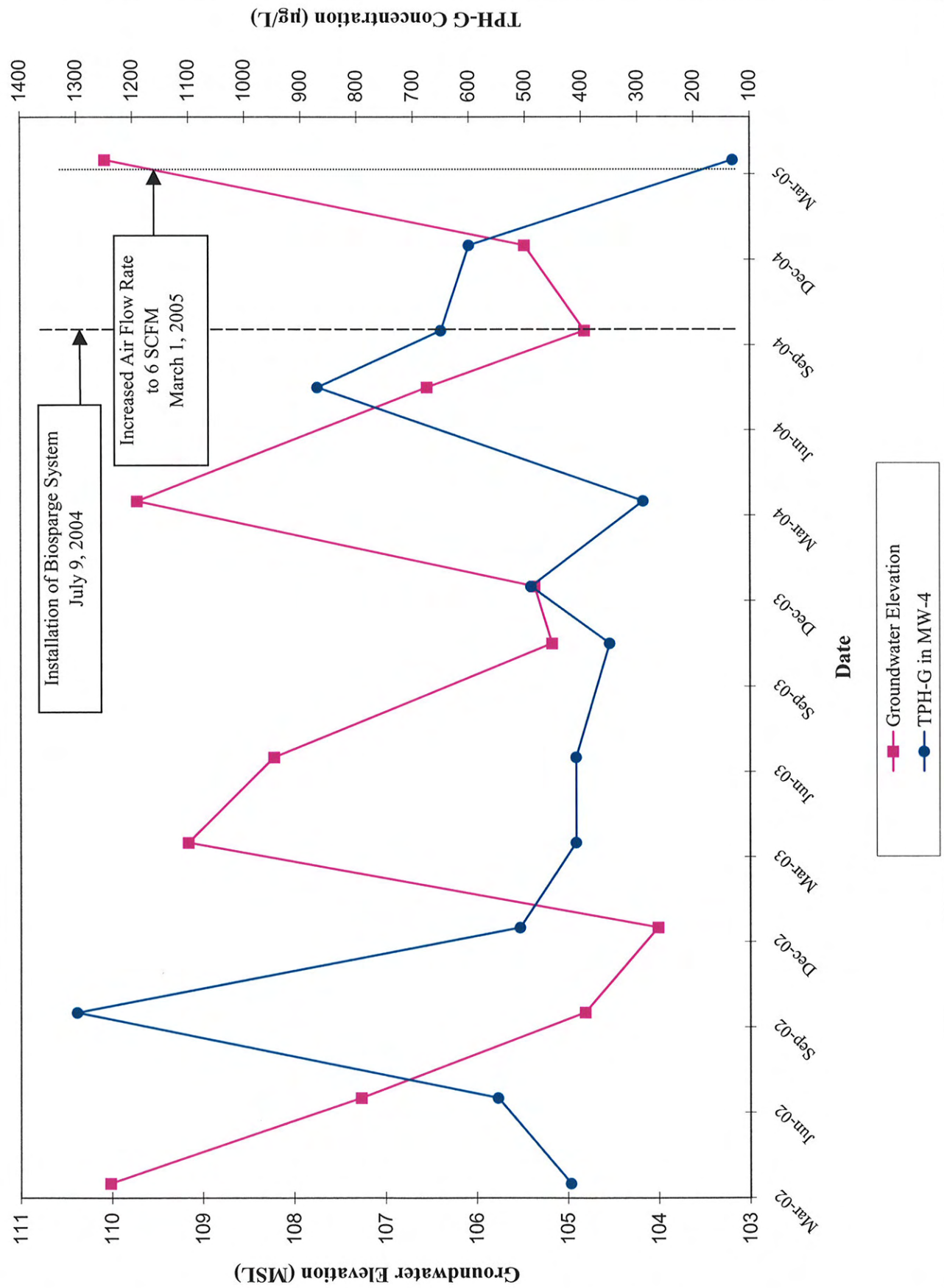
Notes:

a = Misread System Hour Meter Reading
psi = Pounds per square inch
S.C.F.M = Standard Cubic Feet Per Minute
NM = Not measured
DO = Dissolved oxygen

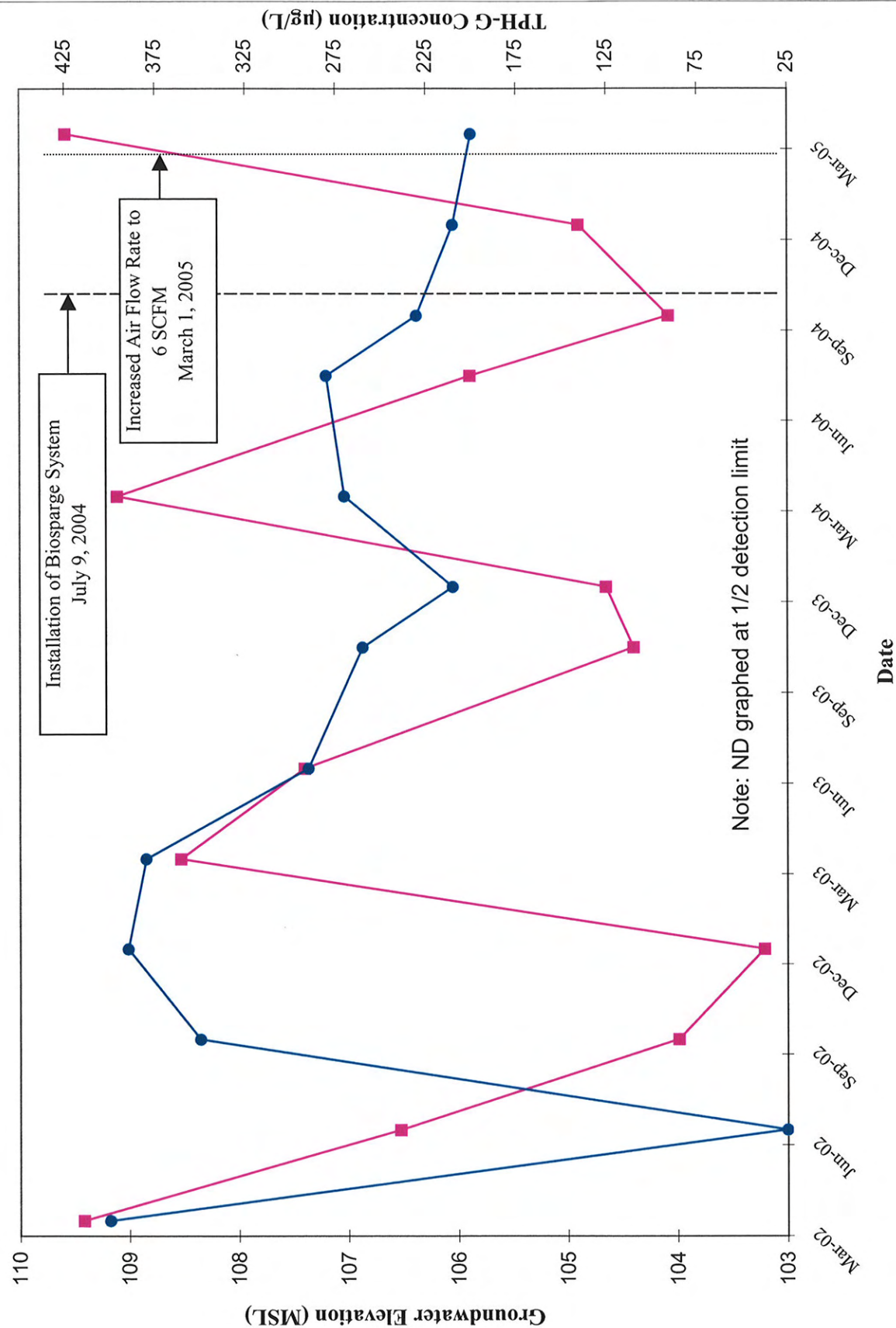
Graph 1 - TPH-G Concentrations vs. Groundwater Elevations Over Time in MW-1



Graph 2 - TPH-G Concentrations vs. Groundwater Elevations Over Time in MW-4



Graph 3 - TPH-G Concentrations vs. Groundwater Elevations Over Time in MW-5



Appendix A

Site-Specific Sampling Procedures

WINZLER & KELLY CONSULTING ENGINEERS

Site-Specific Groundwater Sampling Procedures Mani Site 200 Talmadge Drive, Santa Rosa, California March 16 and 17, 2005

1. Objective

Collect representative water level data and groundwater samples.

2. Personnel Required and Responsibilities

Winzler & Kelly Technician: A qualified Winzler & Kelly technician performed the quarterly sampling events in accordance with the procedures outlined below.

3. Procedures

3a. Decontamination Procedures

- The wash and rinse buckets, the ES-60 purger pump, and the water level meter were decontaminated usingalconox soap and potable water.
- The pump and water level meter were decontaminated following use in each well.
- Nitrile gloves were worn by the sampler at all times and changed after handling equipment and instruments.

3b. Calibration Procedures

- The Ultrameter was calibrated for conductivity and pH. Temperature calibration is not necessary in the Ultrameter.
- Conductivity was calibrated using KCl-7000 standard solution within its expiration date.
- The calibration for pH included “zeroing” the Ultrameter with a pH 7 buffer solution followed by adjusting the gain with acid and base buffers (4.01 and 10.00).

3c. Groundwater Elevations

- All monitoring wells were opened and expandable caps removed.
- Each well was allowed to equilibrate to atmospheric pressure for a minimum of 30 minutes.
- A water level meter was used to measure the depth-to-groundwater in each monitoring well.
- The depth, time, and visual observations regarding well access, condition, security, etc., were recorded on a Water Level Data Sheet.

3d. DO Concentrations

- The membrane on the YSI Model 55 DO meter was checked for the presence of bubbles and wrinkles, neither of which was observed.
- The meter was calibrated in the field prior to collecting measurements.
- Using the calibrated YSI Model 55 DO Meter, DO concentrations were measured in each monitoring well.

3e. Purging

- The volume of standing water in each monitoring well was calculated using the diameter of the well, the measured depth-to-water and the depth-to-bottom. The volume was recorded on the Well Sampling Data Sheet for each well.
- The wells were purged using an ES-60 purger pump attached to 40 feet of plastic tubing.
- Conductivity, pH, temperature, and ORP were monitored using the Ultrameter at each well casing interval throughout the purging process. Visual observations of color/odor/turbidity were also monitored.
- The time, readings, and visual comments were recorded on the Well Sampling Data Sheet.
- Each well was purged until the indicator parameters stabilized.
- Purge and decontamination water was transferred to a 55-gallon drum labeled and stored on site.

3f. Groundwater Sample Collection

- Groundwater samples were collected by lowering previously unused, disposable, polyethylene, bottom-filling bailers into the well.
- When completely full, the bailer was carefully retracted from the well casing.
- The water was transferred from the bailer to the appropriate certified clean sampling containers.
- Each VOA was immediately capped. The vial was checked for air bubbles by inverting and gently tapping. If any bubbles were visible, a new vial was filled and confirmed to be free of any air bubbles.
- All samples were labeled with the following information:

Sample ID	Date and Time Sample Collected
Location	Sampler's Initials
Project Number	
- Sample information was documented on a Chain-of-Custody form.
- All samples were placed in an ice chest chilled with ice.
- Upon completion of the sampling activities, each well was closed and secured by replacing the well cap and lock.

4. Equipment Used:

- Disposable gloves
- Potable water
- Alconox soap
- Containers to hold rinsate water
- Scrub brushes
- Tools to open wells
- Keys to wells
- Water Level Data Form / Pencil
- Well Sampling Data Sheets
- Water level meter
- ES-60 Purger Pump
- YSI Model 55 DO meter
- UltraMeter 6P
- Containers to hold extracted water (as required)
- Disposable bailers (previously unused)
- Monofilament nylon line (50-lb test)
- Scissors
- Sample containers (preserved, as required) - provided by the laboratory
- Sample labels
- Ice chest
- Ice
- Labels / Indelible marker
- Trash bags
- 55-gallon drums
- Ziploc bags

Appendix B

Analytical Laboratory Report



Report Date: March 31, 2005

Pon Xayasaeng
Winzler & Kelly Consulting Engineers
495 Tesconi Circle, Suite 9
Santa Rosa, CA 95401-4696

LABORATORY REPORT

Project Name: **Mani Site** **0234305001.32002**

Lab Project Number: **5031808**

This 15 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.
Laboratory Director



TPH Gasoline in Water

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28934	MW-2	TPH/Gasoline	ND	50

Date Sampled: 03/17/05	Date Analyzed: 03/22/05	QC Batch #: 5412
Date Received: 03/18/05	Method: EPA 5030/8015M	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28935	MW-6	TPH/Gasoline	ND	50

Date Sampled: 03/17/05	Date Analyzed: 03/22/05	QC Batch #: 5412
Date Received: 03/18/05	Method: EPA 5030/8015M	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28936	MW-5	TPH/Gasoline	200	50

Date Sampled: 03/17/05	Date Analyzed: 03/22/05	QC Batch #: 5412
Date Received: 03/18/05	Method: EPA 5030/8015M	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28937	MW-4	TPH/Gasoline	130	50

Date Sampled: 03/17/05	Date Analyzed: 03/22/05	QC Batch #: 5412
Date Received: 03/18/05	Method: EPA 5030/8015M	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28938	MW-1	TPH/Gasoline	1,200	50

Date Sampled: 03/17/05	Date Analyzed: 03/22/05, 03/23/05	QC Batch #: 5412
Date Received: 03/18/05	Method: EPA 5030/8015M	



TPH Diesel in Water

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28934	MW-2	TPH/Diesel	ND	50

Date Sampled: 03/17/05	Date Extracted: 03/21 & 22/05	QC Batch #: 5409
Date Received: 03/18/05	Date Analyzed: 03/22/05	Method: EPA 3510/8015M

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28935	MW-6	TPH/Diesel	ND	50

Date Sampled: 03/17/05	Date Extracted: 03/21 & 22/05	QC Batch #: 5409
Date Received: 03/18/05	Date Analyzed: 03/22/05	Method: EPA 3510/8015M

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28936	MW-5	TPH/Diesel	ND	50

Date Sampled: 03/17/05	Date Extracted: 03/21 & 22/05	QC Batch #: 5409
Date Received: 03/18/05	Date Analyzed: 03/22/05	Method: EPA 3510/8015M

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28937	MW-4	TPH/Diesel	ND	50

Date Sampled: 03/17/05	Date Extracted: 03/21 & 22/05	QC Batch #: 5409
Date Received: 03/18/05	Date Analyzed: 03/22/05	Method: EPA 3510/8015M

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28938	MW-1	TPH/Diesel	290 (1)	50

Date Sampled: 03/17/05	Date Extracted: 03/21 & 22/05	QC Batch #: 5409
Date Received: 03/18/05	Date Analyzed: 03/22/05	Method: EPA 3510/8015M

(1) The sample chromatogram does not exhibit a chromatographic pattern characteristic of diesel. Higher boiling point constituents of weathered gasoline are present in the early diesel range.



Volatile Hydrocarbons by GC/MS in Water

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
28934	MW-2	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	2.1	1.0
		m,p-xylene	4.1	1.0
		o-xylene	ND	1.0
Oxygenated Gasoline Additives				
		tert-butyl alcohol (TBA)	ND	25
		methyl tert-butyl ether (MTBE)	ND	1.0
		di-isopropyl ether (DIPE)	ND	1.0
		ethyl tert-butyl ether (ETBE)	ND	1.0
		tert-amyl methyl ether (TAME)	ND	1.0
Surrogates		Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)		20.7	104	70 – 130
toluene-d ₈ (20)		19.3	96.3	70 – 130
4-bromofluorobenzene (20)		18.2	91.0	70 – 130

Date Sampled: 03/17/05	Date Analyzed: 03/22/05	QC Batch #: 5406
Date Received: 03/18/05	Method: EPA 8260B	



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
28935	MW-6	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	ND	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0

Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	25
methyl tert-butyl ether (MTBE)	ND	1.0
di-isopropyl ether (DIPE)	ND	1.0
ethyl tert-butyl ether (ETBE)	ND	1.0
tert-amyl methyl ether (TAME)	ND	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.8	104	70 – 130
toluene-d ₈ (20)	20.2	102	70 – 130
4-bromofluorobenzene (20)	18.6	93.0	70 – 130

Date Sampled: 03/17/05
Date Received: 03/18/05

Date Analyzed: 03/22/05
Method: EPA 8260B

QC Batch #: 5406



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
28936	MW-5	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	ND	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0

Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	25
methyl tert-butyl ether (MTBE)	4.4	1.0
di-isopropyl ether (DIPE)	ND	1.0
ethyl tert-butyl ether (ETBE)	ND	1.0
tert-amyl methyl ether (TAME)	ND	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.7	104	70 – 130
toluene-d ₈ (20)	19.6	98.0	70 – 130
4-bromofluorobenzene (20)	18.5	92.5	70 – 130

Date Sampled: 03/17/05
Date Received: 03/18/05

Date Analyzed: 03/22/05
Method: EPA 8260B

QC Batch #: 5406



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
28937	MW-4	benzene	ND	1.0
		toluene	ND	1.0
		ethyl benzene	ND	1.0
		m,p-xylene	ND	1.0
		o-xylene	ND	1.0

Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	25
methyl tert-butyl ether (MTBE)	ND	1.0
di-isopropyl ether (DIPE)	ND	1.0
ethyl tert-butyl ether (ETBE)	ND	1.0
tert-amyl methyl ether (TAME)	ND	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	21.0	105	70 – 130
toluene-d ₈ (20)	19.7	98.5	70 – 130
4-bromofluorobenzene (20)	18.5	92.5	70 – 130

Date Sampled: 03/17/05
Date Received: 03/18/05

Date Analyzed: 03/22/05
Method: EPA 8260B

QC Batch #: 5406



Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
28938	MW-1	benzene	1.3	1.0
		toluene	1.6	1.0
		ethyl benzene	25	1.0
		m,p-xylene	54	1.0
		o-xylene	12	1.0

Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	25
methyl tert-butyl ether (MTBE)	1.4	1.0
di-isopropyl ether (DIPE)	ND	1.0
ethyl tert-butyl ether (ETBE)	ND	1.0
tert-amyl methyl ether (TAME)	ND	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	21.5	108	70 – 130
toluene-d ₈ (20)	19.6	98.0	70 – 130
4-bromofluorobenzene (20)	18.2	91.0	70 – 130

Date Sampled: 03/17/05
Date Received: 03/18/05

Date Analyzed: 03/22/05
Method: EPA 8260B

QC Batch #: 5406



Nitrate as Nitrogen in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28934	MW-2	Nitrate as Nitrogen ($\text{NO}_3^{-1}\text{-N}$)	2.0	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28935	MW-6	Nitrate as Nitrogen ($\text{NO}_3^{-1}\text{-N}$)	1.8	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28936	MW-5	Nitrate as Nitrogen ($\text{NO}_3^{-1}\text{-N}$)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28937	MW-4	Nitrate as Nitrogen ($\text{NO}_3^{-1}\text{-N}$)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28938	MW-1	Nitrate as Nitrogen ($\text{NO}_3^{-1}\text{-N}$)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	



Nitrite as Nitrogen in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28934	MW-2	Nitrite as Nitrogen ($\text{NO}_2^{-1}\text{-N}$)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28935	MW-6	Nitrite as Nitrogen ($\text{NO}_2^{-1}\text{-N}$)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28936	MW-5	Nitrite as Nitrogen ($\text{NO}_2^{-1}\text{-N}$)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28937	MW-4	Nitrite as Nitrogen ($\text{NO}_2^{-1}\text{-N}$)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28938	MW-1	Nitrite as Nitrogen ($\text{NO}_2^{-1}\text{-N}$)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	



Ammonia as Nitrogen in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28934	MW-2	Ammonia as Nitrogen (NO ₄ ⁻¹ -N)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/25/05	QC Batch #: 5425
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28935	MW-6	Ammonia as Nitrogen (NO ₄ ⁻¹ -N)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/25/05	QC Batch #: 5425
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28936	MW-5	Ammonia as Nitrogen (NO ₄ ⁻¹ -N)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/25/05	QC Batch #: 5425
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28937	MW-4	Ammonia as Nitrogen (NO ₄ ⁻¹ -N)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/25/05	QC Batch #: 5425
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28938	MW-1	Ammonia as Nitrogen (NO ₄ ⁻¹ -N)	ND	0.15

Date Sampled: 03/17/05	Date Analyzed: 03/25/05	QC Batch #: 5425
Date Received: 03/18/05	Methods: EPA 300 (IC)	



Phosphate in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28934	MW-2	Phosphate (PO ₄)	ND	1.0

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28935	MW-6	Phosphate (PO ₄)	ND	1.0

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28936	MW-5	Phosphate (PO ₄)	ND	1.0

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28937	MW-4	Phosphate (PO ₄)	ND	1.0

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
28938	MW-1	Phosphate (PO ₄)	ND	1.0

Date Sampled: 03/17/05	Date Analyzed: 03/18/05	QC Batch #: 5419
Date Received: 03/18/05	Methods: EPA 300 (IC)	



LABORATORY QUALITY ASSURANCE REPORT

QC Batch #: 5412

Lab Project #: 5031808

Sample ID	Compound	Result (ug/L)
MB	TPH/Gas	ND
MB	MTBE	ND
MB	Benzene	ND
MB	Toluene	ND
MB	Ethyl Benzene	ND
MB	Xylenes	ND

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.
28934	CMS	TPH/Gas		NS	
	CMS	Benzene	9.27	10.0	92.7
	CMS	Toluene	9.24	10.0	92.4
	CMS	Ethyl Benzene	9.24	10.0	92.4
	CMS	Xylenes	29.3	30.0	97.8

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.	RPD
28934	CMSD	TPH/Gas		NS		
	CMSD	Benzene	9.40	10.0	94.0	1.4
	CMSD	Toluene	9.29	10.0	92.9	0.5
	CMSD	Ethyl Benzene	9.21	10.0	92.1	0.29
	CMSD	Xylenes	28.6	30.0	95.4	2.5

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery



QC Batch #: 5409

Lab Project #: 5031808

Sample ID	Compound	Result (ug/L)
MB	TPH/Diesel	ND

Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.
LCS	TPH/Diesel	2,060	2,730	75.5

Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.	RPD
LCSD	TPH/Diesel	2,120	2,730	77.7	2.9

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: 5406

Lab Project #: 5031808

Sample ID	Compound Name	Result (ug/L)
MB	1,1-dichloroethene	ND
MB	benzene	ND
MB	trichloroethene	ND
MB	toluene	ND
MB	chlorobenzene	ND

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	23.5	118	70 – 130
toluene-d ₈ (20)	20.1	101	70 – 130
4-bromofluorobenzene (20)	17.9	89.5	70 – 130



Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.
28938	CMS	1,1-dichloroethene	24.0	25.0	96.0
	CMS	benzene	25.8	25.0	98.0
	CMS	trichloroethene	22.6	25.0	90.4
	CMS	toluene	26.6	25.0	100
	CMS	chlorobenzene	23.8	25.0	95.2

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	22.0	110	70 – 130
toluene-d ₈ (20)	20.7	104	70 – 130
4-bromofluorobenzene (20)	18.0	90.0	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.	RPD
28938	CMSD	1,1-dichloroethene	22.8	25.0	91.2	5.1
	CMSD	benzene	25.8	25.0	98.0	0.0
	CMSD	trichloroethene	22.3	25.0	89.2	1.3
	CMSD	toluene	25.3	25.0	94.8	5.0
	CMSD	chlorobenzene	24.7	25.0	98.8	3.7

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	21.0	105	70 – 130
toluene-d ₈ (20)	19.6	98.0	70 – 130
4-bromofluorobenzene (20)	17.8	89.0	70 – 130

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery



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Fax (707) 769-8093



CHAIN OF CUSTODY

LAB PROJECT NUMBER: 5031808 0234305011.32002

WINZLER & KELLY PROJECT NAME: Mani Site

WINZLER & KELLY PROJECT NUMBER: 0234305011.32002

GEOTRACKER EDF: X Y N
GLOBAL ID: T0409700725

COOLER TEMPERATURE
Blue Ice °C

COC
PAGE 1 OF 1

TURNAROUND TIME (check one)

☒ Nitrate, Nitrite, Plus/Minus - 48 hrs

MOBILE LAB

SAME DAY

24 HOURS

48 HOURS

5 DAYS

NORMAL ☒

CLIENT INFORMATION

COMPANY NAME: WINZLER & KELLY CONSULTING ENGINEERS

ADDRESS: 495 TESCONI CIRCLE, SUITE 9

SANTA ROSA, CA 95401-4696

CONTACT: Results - Sample; Questions - Per

PHONE#: (707) 523-1010

FAX #: (707) 527-8679

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	ANALYSIS																	COMMENTS	LAB SAMPLE #	
							TPH/GAS/2000X EPA 8015M/2000	TPH DIESEL / EPA 8015M	VOLATILE HYDROCARBONS EPA 8260B (FULL LIST)	BTEX & OXYGENATES + PEG/2000X EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS EPA 8010 / EPA 8260B	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 5520F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141/ 8082	Nitrate as N	Nitrite as N	Ammonia as N	Total Phosphate							
1	MW-2	3/17/05	12:13	W	7	Y/N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	28934	
2	MW-6	/	12:25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	28935	
3	MW-5	/	12:36	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	28936	
4	MW-4	/	12:46	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	28937	
5	MW-1	/	12:59	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	28938	
6																										
7																										
8																										
9																										
10																										
11																										

SIGNATURES

SAMPLED BY:

Per Xuyasany

DATE 3/17/05

TIME 14:00

RELINQUISHED BY:

Per Xuyasany
Corrina Salvadori

DATE 3/18/05

TIME 3:08

RECEIVED BY-LABORATORY:

R. Picco

SIGNATURE

DATE

TIME

Appendix C

GeoTracker Upload Verification

Electronic Submittal Information

[Main Menu](#) | [View/Add Facilities](#) | [Upload EDD](#) | [Check EDD](#)

UPLOADING A GEO_WELL FILE

Processing is complete. No errors were found!
Your file has been successfully submitted!

Submittal Title: 1st Quarter 05 QMR
Submittal Date/Time: 4/5/2005 10:57:11 AM
Confirmation Number: 7966221451

[Back to Main Menu](#)

Logged in as WINZLER (AUTH_RP)

CONTACT SITE [ADMINISTRATOR](#).